Name _____Date _____ Period _____

Starlight

Purpose: The spectrum of light is commonly observed in a rainbow. Prisms and diffraction gratings can also divide light into its colors. Light given off by a star is analyzed by astronomers and provides a great deal of information, in this lab you will observe the spectra of some elements and learn about red shift, a way that light can show what direction an object is moving. The lines on the spectrum of an object moving away from Earth are shifted toward the red end of the spectrum.

Materials: spectroscope or diffraction grating slides, light sources, colored pencils

Procedure:

1. Make sure you can see the spectrum through your spectroscope or diffraction grating.
2. Focus your scope on the light sources provided. Draw the lines you seen on the spectrum on your paper.

Prediction: Which element will have the most colorful spectrum?

Data: Write the elements name to the right of the spectra:

red orange yellow green blue violet name:

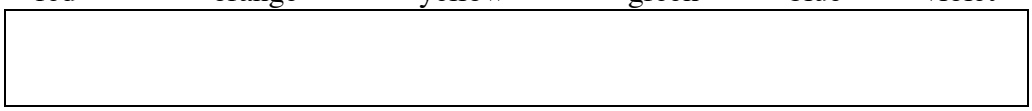
red orange yellow green blue violet name:

red orange yellow green blue violet name:

red orange yellow green blue violet name:

red orange yellow green blue violet name:

red orange yellow green blue violet name:



Analysis:

1. Which element had the most colorful spectrum?
2. The least?
3. What does the spectrum tell about a star?
4. When do elements give off colors?
5. Red shift occurs when the colors are shifted to the red end of the spectrum. It indicates that an object is moving away from the observer. Redraw the spectrum of hydrogen showing a red shift:

red orange yellow green blue violet